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EXAMINER	
LAM, VINH TANG	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/599,954	SEETZEN, HELGE	
	Examiner	Art Unit	
	VINH T. LAM	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 January 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-32* is/are pending in the application.

4a) Of the above claim(s) *3,7-12 and 20-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-6,13-19 and 29-32* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *13 October 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *05/28/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Election/Restrictions

1. Claims 3, 7-12, and 20-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to the nonelected Species 1, 2, and 4, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 01/27/2009.

2. This application contains Claims 3, 7-12, and 20-25 are drawn to an invention nonelected with traverse in the reply filed on 01/27/2009. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

3. Applicant's election with traverse of Species 3 (Figure 4) in the reply filed on 01/27/2009 is acknowledged. The traversal is on the ground(s) that the species are not mutually exclusive. This is not found persuasive because:

First of all according to 35 U.S.C. 121, if two or more independent and distinct inventions are claimed in one application, the Director may require the application to be restricted to one of the inventions.

Secondly, the limitation of process "224" disclosed for Third Species (Figure 4) but not in other species.

Finally, if the Species are not independent, nor distinct, nor mutually exclusive, then one of the species unpatentable over the prior art would be used in a rejection under 35 U.S.C. 103(a) of the other species.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims **1**, **2**, **4-6**, **13-19**, and **29-32** are rejected under 35 U.S.C. 103 (a) as being unpatentable over Baik (US Patent No. 7450104) in views of **Childers et al. (US Patent No. 6817717).**

Regarding Claims **1** and **31**, **Baik** teaches a method and a computer program product comprising a medium carrying computer readable instructions which, when executed by a processor, cause the processor to execute a method of processing a series of frames for displaying on a display having a first modulator disposed to illuminate a second modulator, the method comprising:

(a) receiving a key frame image (Col. **5**, Ln. **41-42**, FIG. **1**);

(b) calculating a key frame first modulation signal based on the key frame image (Col. **5**, Ln. **43-48**, Ln. **52-58**, FIG. **1**); and

(d) for each of a plurality of frames in the series of frames (Col. **6**, Ln. **33-37**, FIG. **4**):

(i) receiving a current frame image (Col. **9**, Ln. **8-10**, FIG. **6**);

(ii) determining a current frame second modulation signal based on the current frame image and the key frame luminance map (Col. **9**, Ln. **13-21**, FIG. **6**); and

(iii) selecting the key frame first modulation signal to be a current frame first modulation signal which is obviously and implicitly implied if there's no difference in brightness between previous and current frames (Col. **11**, Ln. **14-17**, FIGs. **7 & 8**).

However, **Baik** does not teach (c) calculating a key frame luminance map corresponding to light incident on the second modulator when the first modulator is driven by the key frame first modulation signal.

In the same field of endeavor, **Childers et al.** teach (c) calculating a key frame luminance map corresponding to light incident on the second modulator when the first modulator is driven by the key frame first modulation signal (Col. **2**, Ln. **35-50**, FIG. **1**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Baik** teaching of calculating a key frame first modulation signal based on the key frame image and performing similar steps on the current frame with **Childers et al.** teaching of calculating a key frame luminance map corresponding to light incident on the second modulator when the first modulator is driven by the key frame first modulation signal in order to benefit of reducing time and cost by having a method comprising calculating a key frame first modulation signal based on the key frame image, performing similar steps on the current frame, and

calculating a key frame luminance map corresponding to light incident on the second modulator when the first modulator is driven by the key frame first modulation signal in a dual modulation display.

Regarding Claim **29**, **Baik** teaches a method for processing a frame for displaying on a display having a first modulator disposed to illuminate a second modulator, the method comprising:

obtaining image data for a current frame (Col. **9**, Ln. **8-10**, FIG. **6**);

retrieving a predetermined luminance map corresponding to a predetermined first modulation signal for the first modulator (Col. **9**, Ln. **13-21**, FIG. **6**).

However, **Baik** does not teach determining whether the second modulator is capable of modulating the luminance map to reproduce the an image of the current frame on the display and generating a second modulation signal for the second modulator based on the image data for the current frame and the luminance map.

In the same field of endeavor, **Childers et al.** teach:

determining whether the second modulator is capable of modulating the luminance map to reproduce the an image of the current frame on the display (Col. **2**, Ln. **46-50**, FIG. **1**), and if so,

generating a second modulation signal for the second modulator based on the image data for the current frame and the luminance map (Col. **2**, Ln. **35-50**, FIG. **1**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Baik** teaching of obtaining image data for a current frame and retrieving a luminance map corresponding to a first modulation signal with

Childers et al. teaching of determining the second modulator modulating capability to reproduce the an image of the current frame and generating a second modulation signal based on the current frame data and the luminance map in order to benefit of reducing time and cost by having a method comprising obtaining image data for a current frame, retrieving a luminance map corresponding to a first modulation signal, determining the second modulator modulating capability to reproduce the an image of the current frame, and generating a second modulation signal based on the current frame data with its luminance map.

Regarding Claim **30**, **Baik** teaches a method for processing a plurality of frames for displaying on a display having a first modulator disposed to illuminate a second modulator, the method comprising:

obtaining image data for the plurality of frames (Col. **6**, Ln. **33-37**, FIG. **4**);

calculating a key frame first modulation signal for the first modulator based on the image data for a key frame of the plurality of frames (Col. **5**, Ln. **43-48**, Ln. **52-58**, FIG. **1**).

However, **Baik** does not teach calculating a key frame luminance map corresponding to light incident on the second modulator when the first modulator is driven by the key frame first modulation signal and generating a second modulation signal for each of the plurality of frames based on the image data for each frame and the key frame luminance map.

In the same field of endeavor, **Childers et al.** teach:

calculating a key frame luminance map corresponding to light incident on the second modulator when the first modulator is driven by the key frame first modulation signal (Col. **2**, Ln. **35-50**, FIG. **1**);

generating a second modulation signal for each of the plurality of frames based on the image data for each frame and the key frame luminance map (i.e. obvious because each frame is processed as current frame; Col. **2**, Ln. **35-50**, FIG. **1**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Baik** teaching of obtaining image data for the plurality of frames and calculating a key frame first modulation signal based on the key frame image data with **Childers et al.** teaching of calculating a key frame luminance map corresponding to second modulator when the first modulator is driven and generating a second modulation signal for each frame based on each frame image data and the key frame luminance map in order to benefit of reducing time and cost by having a method comprising obtaining image data for the plurality of frames, calculating a key frame first modulation signal based on the key frame image data, calculating a key frame luminance map corresponding to second modulator when the first modulator is driven, and generating a second modulation signal for each frame based on each frame image data and the key frame luminance map.

Regarding Claim **32**, **Baik** teaches a system for displaying a series of frames on a display having a first modulator disposed to illuminate a second modulator, the system comprising a processor configured to:

(a) receive a key frame image (Col. **5**, Ln. **41-42**, FIG. **1**);

(b) calculate a key frame first modulation signal based on the key frame image (Col. **5**, Ln. **43-48**, Ln. **52-58**, FIG. **1**);

(d) determine a key frame second modulation signal based on the key frame image and the key frame luminance map (Col. **9**, Ln. **13-21**, FIG. **6**);

(f) for each of a plurality of other frames in the series of frames (Col. **6**, Ln. **33-37**, FIG. **4**):

(i) receive a current frame image (Col. **9**, Ln. **8-10**, FIG. **6**);

(ii) determine a current frame second modulation signal based on the current frame image and the key frame luminance map (Col. **9**, Ln. **13-21**, FIG. **6**).

However, **Baik** does not teach to:

(c) calculate a key frame luminance map of light from the first modulator incident on the second modulator;

(e)/(iii) drive the first modulator with the key frame first modulation signal and drive the second modulator with the key/current frame second modulation signal to generate the key/current frame image on the display.

In the same field of endeavor, **Childers et al.** teach to:

(c) calculate a key frame luminance map of light from the first modulator incident on the second modulator (Col. **2**, Ln. **35-50**, FIG. **1**);

(e)/(iii) drive the first modulator with the key frame first modulation signal and drive the second modulator with the key/current frame second modulation signal to generate the key/current frame image on the display (Col. **2**, Ln. **35-50**, FIG. **1**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Baik** teaching to receive a key/current frame image, to calculate a key frame first modulation signal based on the key frame image, and to determine a key/current frame second modulation signal based on the key/current frame image and the key frame luminance map with **Childers et al.** teaching to calculate a key frame luminance map of light from the first modulator incident on the second modulator, to drive the first modulator with the key frame first modulation signal and, to drive the second modulator with the key/current frame second modulation signal to generate the key/current frame image on the display in order to benefit of reducing time and cost by having a system comprising a processor configured to receive a key/current frame image, to calculate a key frame first modulation signal based on the key frame image, to determine a key/current frame second modulation signal based on the key/current frame image and the key frame luminance map, to calculate a key frame luminance map of light from the first modulator incident on the second modulator, to drive the first modulator with the key frame first modulation signal and, to drive the second modulator with the key/current frame second modulation signal to generate the key/current frame image on the display.

Regarding Claim **2**, **Baik** teaches a method according to claim 1 wherein step (d) comprises: (iv) returning to step (a) after the plurality of frames (Col. **11**, Ln. **14-17**, FIGs. **7 & 8**).

Regarding Claim **4**, **Childers et al.** teach a method according to claim 2 wherein calculating the current frame second modulation signal comprises:

comparing a plurality of pixels of the current frame second modulation signal with a second modulator range on a pixel by pixel basis (Col. **2**, Ln. **46-50**, FIG. **1**); and

updating the key frame first modulation signal and key frame luminance map (Col. **2**, Ln. **60-65**) if the pixels of the current frame second modulation signal are outside the second modulator range for a threshold number of pixels (Col. **3**, Ln. **31-36**, Ln. **52-58**, FIG. **2**).

Regarding Claim **5**, **Childers et al.** teach a method according to claim 4 wherein updating the key frame first modulation signal and key frame luminance map comprises:

updating portions of the key frame first modulation signal and key frame luminance map (Col. **2**, Ln. **60-65**) which effect pixels for which the current frame second modulation signal is outside the second modulator range (Col. **3**, Ln. **31-36**, Ln. **52-58**, FIG. **2**).

Regarding Claims **6** and **19**, **Baik** teaches a method according to claims 4 and 17, wherein updating the key frame first modulation signal and key frame luminance map comprises:

calculating the key frame first modulation signal using the current frame image as the key frame image (Col. **5**, Ln. **43-48**, Ln. **52-58**, FIG. **1**).

However, **Baik** does not teach calculating an approximation of the key frame luminance map.

In the same field of endeavor, **Childers et al.** teach calculating an approximation of the key frame luminance map (Col. **2**, Ln. **35-50**, FIG. **1**).

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to combine **Baik** teaching of calculating the key frame first modulation signal using the current frame image as the key frame image with **Childers et al.** teaching of calculating an approximation of the key frame luminance map in order to benefit of accommodating differences between modulations by having a method of calculating the key frame first modulation signal using the current frame image as the key frame image and approximating of the key frame luminance map.

Regarding Claims **13-15** and **26-28, Childers et al.** teach a method according to claims 2 and 17 respectively, wherein calculating the current frame second modulation signal comprises:

comparing a plurality of pixels of the current frame second modulation signal with a second modulator range on a pixel by pixel basis (Col. **2**, Ln. **46-50**, FIG. **1**); and

updating the key frame first modulation signal and key frame luminance map (Col. **2**, Ln. **60-65**) if (an average (Claims 13 and 26)) (a cumulative (Claims 14 and 27)) amount (i.e. obviously deduced and well-known in the art) by which (at least one of (Claims 15 and 28)) the pixels of the current frame second modulation signal are outside the second modulator range exceeds a predetermined threshold (Col. **3**, Ln. **31-36**, Ln. **52-58**, FIG. **2**).

Regarding Claim **16, Baik** teaches a method according to claim 2 comprising receiving at least one future key frame image and calculating a future key frame first modulation signal and luminance map while the plurality of frames are being

processed which is obviously implied because the next frame would be come the current frame (Col. **11**, Ln. **14-17**, FIGs. **7 & 8**).

Regarding Claim **17**, **Childers et al.** teach a method according to claim 1 wherein calculating the current frame second modulation signal comprises:

comparing a plurality of pixels of the current frame second modulation signal with a second modulator range on a pixel by pixel basis (Col. **2**, Ln. **46-50**, FIG. **1**); and

updating the key frame first modulation signal and key frame luminance map (Col. **2**, Ln. **60-65**) if the pixels of the current frame second modulation signal are outside the second modulator range for a threshold number of pixels (Col. **3**, Ln. **31-36**, Ln. **52-58**, FIG. **2**).

Regarding Claim **18**, **Childers et al.** teach a method according to claim 17 wherein updating the key frame first modulation signal and key frame luminance map comprises:

updating portions of the key frame first modulation signal and key frame luminance map (Col. **2**, Ln. **60-65**) which effect pixels for which the current frame second modulation signal is outside the second modulator range (Col. **3**, Ln. **31-36**, Ln. **52-58**, FIG. **2**).

Conclusion

The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure: Philipp; Richard L. et al. **(US 5740352 A)**, Margulis; Neal et al. (US 6157396 A), and Itoh; Hiroshi **(US 7053881 B2)**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to VINH T. LAM whose telephone number is (571)270-3704. The examiner can normally be reached on M-F (7:00-4:30) EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amare Mengistu can be reached on (571) 272-7674. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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